UCID- 17443

Lawrence Livermore Laboratory

U.S. ENERGY FLOW IN 1976

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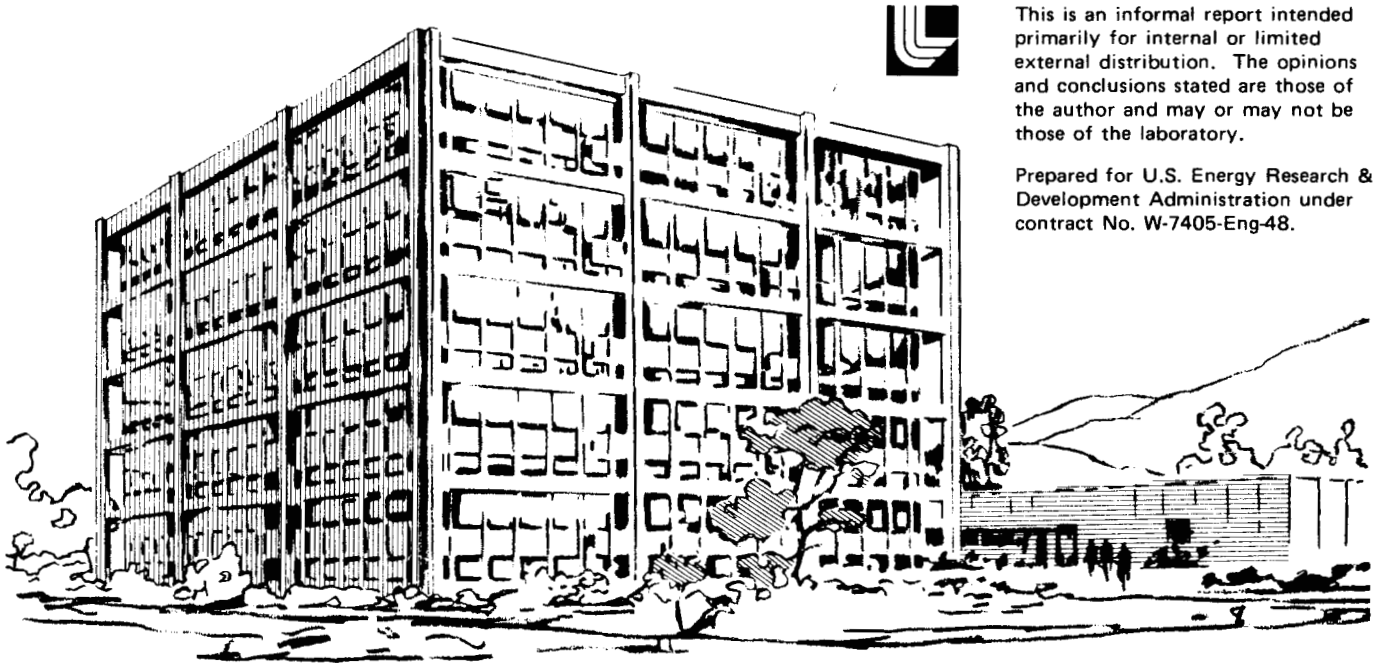
March 24, 1977



Prepared for U.S. Energy Research & Development Administration under contract No. W-7405-Eng-48.

U.S. ENERGY FLOW IN 1976

ABSTRACT

An energy flow diagram for the U.S. for 1976 is presented, and one for 1975 is included for comparison. The most important feature is a greater than 20% increase in oil imports.

U.S. ENERGY FLOW IN 1976

It is useful and interesting to chart the flow of energy in the United States. These charts provide a large amount of information in compact form. On the charts, the width of any unit is proportional to the energy flowing in that unit.

Based on our methods and data supplied in a Department of the Interior news release of March 14, 1977, we have constructed the U.S. Energy Flow Chart for 1976 (Figure 1). For comparison, the chart prepared from like data for 1975 is included (Figure 2). In the figures, all energy is expressed in "quads" (10^{15} B.t.u.). Some significant differences between 1975 and 1976 stand out.

- Total energy use increased 4.8%, almost reaching the record use of 1973.
- Oil imports increased significantly to 15.5 quads, more than 20% above 1975, and almost 44% of our total oil use.
- Coal and natural gas remained more or less constant.
- By our reckoning, the industrial sector was unique in that its energy use decreased somewhat due to conservation efforts.
- Delivered nuclear power increased by 10.9%.
- A trend toward electrification continued with distributed electrical energy increasing by 6.1%.

Not shown in the charts is one encouraging trend. While both energy use and gross national product increased, the energy per GNP ratio declined, continuing a trend started in 1971. The lower this ratio is,

the more efficiently energy is used in the economy. This ratio now stands at 58.5 thousand Btu per 1972 dollar, down 1.2% from 1971.

Some approximate conversion factors are given in the appendix.

APPENDIX: CONVERSION FACTORS

The energy content of fuels varies. Some approximate, rounded conversion factors, useful for estimation, are given below.

Fuel	Energy Content (Btu)
Short ton of coal	22,500,000
Barrel (42 gallons) of crude oil	5,800,000
Cubic foot of natural gas	1,000
Kilowatt hour of electricity	3,400
Fossil fuel to produce one kilowatt hour of electricity	10,400

More detailed conversion factors are given in the Department of the Interior, March 14, 1977 news release.

U.S. ENERGY FLOW - 1976

(PRIMARY RESOURCE CONSUMPTION 72.1 QUADS)

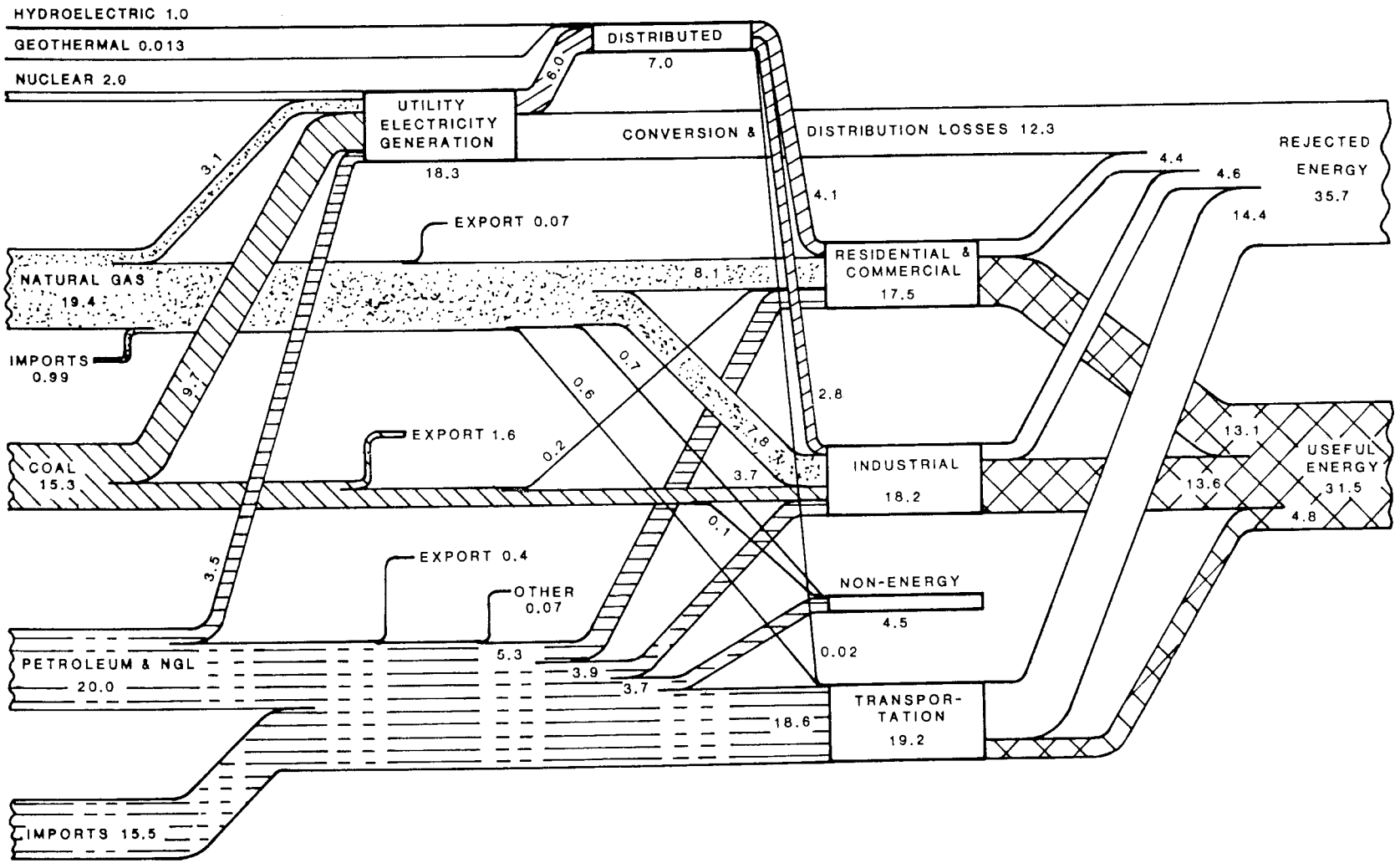
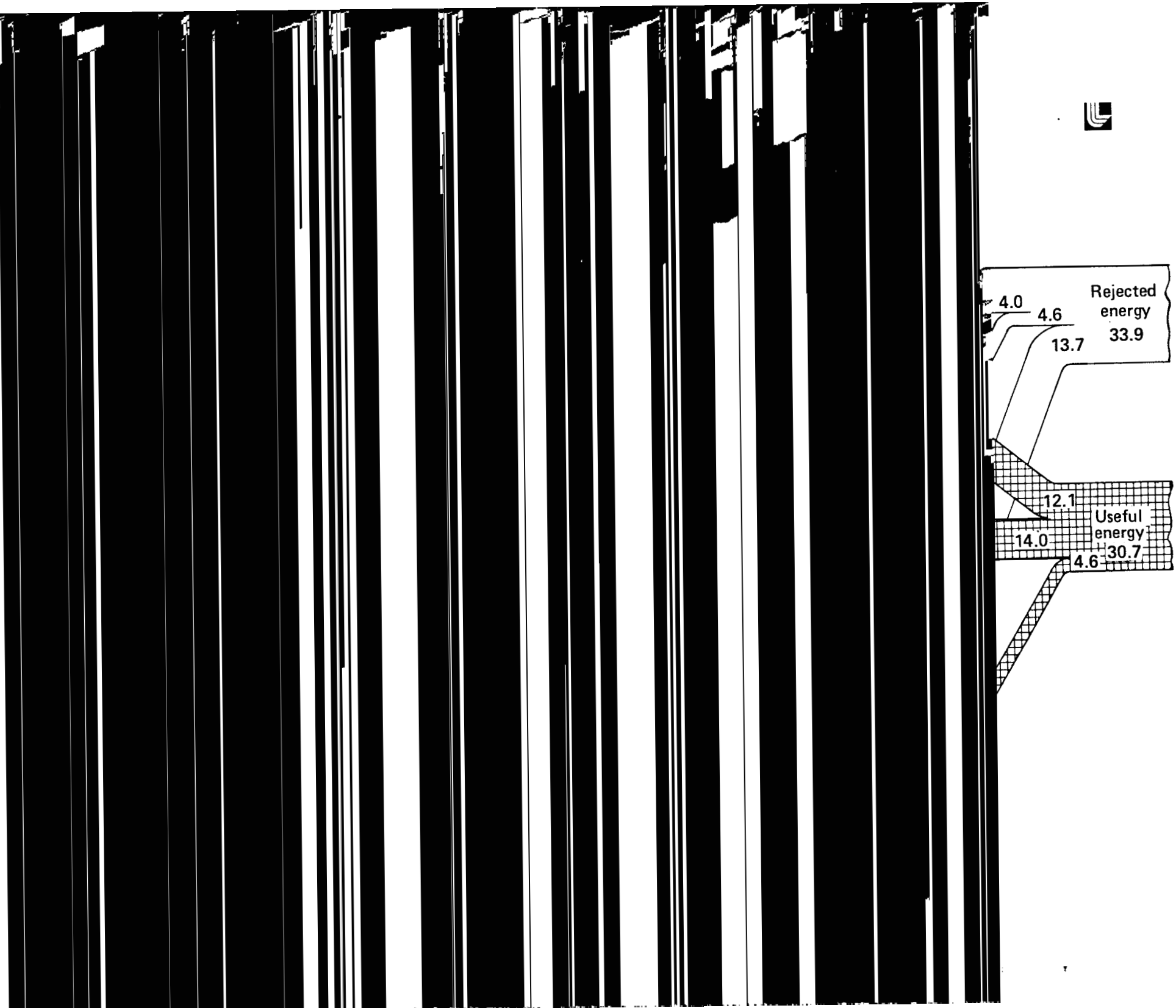


Figure 1.


4.0
4.6
13.7
Rejected energy 33.9
12.1
14.0
Useful energy 30.7
4.6

Printed in the United States of America
Available from
National Technical Information Service
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161
Price: Printed Copy $; Microfiche $3.00

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